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TORRES, JUAN A	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/032,419	HUDSON ET AL.	
	Examiner	Art Unit	
	Juan A. Torres	2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 August 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9-12 and 27-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9-12 and 27-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed on 08/25/2005 have been fully considered but they are not persuasive.

a) Regarding Claim Rejections – 35 USC 102

a.1) Regarding IEEE 802.11a Standard

The Applicant contends:

"Applicants submit that IEEE 802.11a standard does not disclose or even suggest the feature of a "signal comprising a plurality of data streams modulated at different respective modulation levels the data stream's modulation level selected according to the signal to noise ration of the intended receiver" as claimed in Claim 9.

Rather Applicants submit that one skilled in the art on reading the IEEE standard will learn to set a single appropriate set of modulation at the beginning of transmission and then use them for the entire transmission. Thus they would learn that a choice between transmitting data at relatively low rates to the far terminal or at relatively high rates to the near terminal had to be m e when transmission of data started.

In section 17.3.4 1 of the IEEE standard the PLCP transmit procedure is outlined. In paragraph 3 of this section it is stated that the "PLCP shall issue PMD_TXPWRLVL and PMD_RATE primitives to configure the PHY". The RATE field conveys information about the type of modulation and the coding rate as used in the rest of the packet (17.2.2.2) and the required modulation parameters can be discovered from the data rate using Table 78.

Thus in the IEEE standard the subcarriers "shall be modulated by using BPSK, QPSK, 16-QAM or M-QAM modulation " (see 1st paragraph section 17.3,5.7).

Nowhere does the IEEE standard disclose or even suggest having transmitting data intended for separate receivers at different modulation levels according to the signal to noise ratios of the receivers. Therefor, Applicants submit that Claim 9 is not anticipated by the IEEE 802.11a standard. Applicants also submit that Claims 10 and 12 are not anticipated by t e IEEE 802.11a standard at least by virtue of their dependencies.

Claims 27 and 29 have also been amended to recite the feature of a "signal comprising a plurality of data streams modulated at different respective modulation levels the data stream's modulation level selected according to the signal to noise ration of the intended receiver". Therefore Applicants submit that Claims 27 and 29 are not anticipated by the disclosure in the IEEE 802.11a standard. Applicants also submit that Claim 28 is not anticipated by the IEEE 802.11a standard at least by virtue of its dependency.".

The Examiner disagrees and asserts that the IEEE 802.11a works as a wireless Local Area Network, having a base station that communicates with several wireless units that are moving and that are a different distances from the base station (hot point). The closer a wireless units is to the base stations the higher its signal to noise ratio is and they are able to communicate at a higher data rate. So the base station will be communicating with several wireless units each at a data rate that will depend on the signal to noise ration of the signal received by the wireless units. For these reasons and

the reasons stated in the previous Office action, the rejections of the amended claim 9 is maintained.

For these reasons and the reasons stated in the previous Office action, the rejections of claims 10, 12, 27, 28 and 29 are maintained.

a.2) Regarding Qiao

The Applicant contends:

"Applicants respectfully submit that Qiao does not show the feature of a "signal comprising a plurality of data streams modulated at different respective modulation levels the data stream's modulation level selected according to the signal to noise ration of the intended receiver" as claimed in Claim 9.

Qiao is concerned with adding link adaptation to the existing MAC protocol. A link adaptor is described as proving three levels of functionality it "estimates tie current SNR condition based on monitoring the channel conditions and the previous transmission results... selects the optimal combination of the PHY mode and ... fragment size based on the SNR estimation...changes the PHY mode for the next MPDU transmission if there is any variation of the SNR condition" (the fragment size will not be changed during a transmission) (Page 5 left column last paragraph).

It can therefore be seen that one skilled in the art on reading Qiao would only learn to make a choice between transmitting data at relatively low rates to the far terminal or at relatively high rates to the near terminal. Qiao does not disclose or even suggest receivers which receive data at has had its level of modulation selected according to the receiver that it Is Intended to be transmitted to as claimed in Claim 9.

Applicants therefore submit that Claim 9 is not anticipated by Qiao. Applicants also submit that Claims 10 and 12 are not anticipated by Qiao at least by virtue of their dependencies.

Claims 27 and 29 have been mended and recite the feature of a "signal comprising a plurality of data streams modulated at different respective modulation levels the data stream's modulation level selected according to the signal to noise ration of the intended receiver" as recited in Claim 9. Therefore, Applicants respectfully submit that Claim 29 is not anticipated by Qiao. Applicants also submit, that Claim 28 is not anticipated by Qiao at least by virtue of its dependency."

The Examiner disagrees and asserts, that Qiao discloses a wireless Local Area Network, having a base station that communicates with several wireless units that are moving and that are a different distances from the base station (hot point). The closer a wireless units is to the base stations the higher its signal to noise ratio is and they are able to communicate at a higher data rate (see table 1 and figure 6). So the base station will be communicating with several wireless units each at a data rate that will depend on the signal to noise ration of the signal received by the wireless units. For these reasons and the reasons stated in the previous Office action, the rejections of the amended claim 9 is maintained.

For these reasons and the reasons stated in the previous Office action, the rejections of claims 10, 12, 27, 28 and 29 are maintained.

a.3) Regarding Schafer

The Applicant contends:

"Applicants respectfully submit that Schafer does not disclose "a signal sent to a plurality of receivers, the signal comprising a plurality of data streams modulated at different receptive modulation levels.. each receiver demodulating a first data stream from the signal and attempting to demodulate at least one further data stream from the signal" as claimed in Claim 9.

Rather Schafer describes "a system and method for providing adjustable levels of information density in a communicated data steam in response to monitored communication link conditions" (Abstract). The link conditions are monitored in order to provide adjustment of the communicated information density (see Column 5 lines 34 to 36).

Schafer only discloses that a suitable information density is selected by the link. It does not disclose or even suggest at multiple receivers capable of demodulating the signal at deferent modulation levels are transmitted data within the same signal and retrieve data according to the modulation levels that they are able to demodulate because of the

receiver's signal to noise ratio. Applicants therefore submit that one skilled in the ad on reading Schafer would only learn how to make choices between transmitting data at relatively low rates to the far terminal or at relatively high rates to the near terminal.

Applicants therefore respectfully submit that Claim 9 is not anticipated by Schafer. Applicants submit that Claims 10 and 12 are not anticipated by Schafer at least by virtue of their dependencies.

Claim 27 has been amended to recite that the signal has a plurality of data streams intended for a plurality of receivers "each data stream being modulated according to the intended receiver's susceptibility to noise". Therefore, Applicants submit that for the same reasons that given with reference to Claim 9, amended Claim 27 is not anticipated by Schafer. Applicants submit that Claim 28 is not anticipated by Schafer at least by virtue of its dependency.

Claim 29 has been amended and recites all the same features as amended Claim 9. Therefore. Applicants respectfully submit that Claim 29 Is not anticipated by Schafer.

The Examiner disagrees and asserts, that Schafer discloses "In a preferred embodiment the data stream is a time division multiple access data stream providing data communication to a plurality of geographically separated systems. The information density of time bursts associated with each such system may be independently adjusted according to the disclosed invention based upon each such system's link conditions" (Abstract). Schafer clearly states "The present invention is adapted to dynamically adjust communication parameters associated with an information communication link in order to optimize information communication between systems in communication via the link by providing increased information density when supportable by the established link. According to a preferred embodiment of the present invention, a particular modulation level of a multi-level modulation format is selected for use based on link conditions. For example, a constant baud rate but variable index (level) modulation format, such as QAM, may utilized in a radio link and the M-ary QAM signaling level,

hereinafter referred to as the QAM rate, adjusted according to the present invention, i.e., the number of bits per symbol at which information is transmitted is dynamically adjusted" (column 3 lines 50-64); and referring to figure 1 Schafer clearly states "Communication system 100, including centralized hub 101 in communication with nodes 102-105 through radio frequency information communication links, is shown. It shall be appreciated that nodes 102-105 are disposed differing distances from hub 101. Specifically, nodes 102 and 103 are disposed within zone 111 relatively near hub 101, while node 104 is disposed in zone 112 somewhat more distant from hub 101. Finally, node 105 is disposed within zone 113 which is the farthest distance from hub 101... Therefore, a particular information density may be associated with each zone in order to provide a desired level of link availability as between a node located within the zone and the hub. For example, zone 111 may be associated with 64-QAM, zone 112 may be associated with 16-QAM, and zone 113 may be associated with 4-QAM" (column 4 lines 24-61). For these reasons and the reasons stated in the previous Office action, the rejections of claims 9, 10, 27, 28 and 29 are maintained.

a.4) Regarding Trachewsky

The Applicant contends:

"Claim 9 recites the feature of "signal comprising a plurality of data streams modulated at different respective modulation levels the data stream's modulation level selected according to the signal to noise ration of the intended receiver".

Applicants submit that Trachewsky does not disclose this feature. Rather. Trachewsky only discloses that 4Mbaud QAM modulation and 2Mbaud Frequency

Diverse QAM..., [is used] with 2 to 8 bits per Baud constellation encoding, resulting in a PHY-layer payload modulation rate that ranges from 4Mb/s to 32Mb/s" (Column 10 lines 50 to 55). Trachewsky does not disclose how the data streams modulation is selected and does not suggest that the signal may be made up of datastreams intended for different receivers having differing signal to noise ratios.

Trachewsky, when talking about the modulations of data transmitted through the system refers to and incorporates by reference, US Patent Application 09/169,552 (Ojard). Ojard states, "the theoretical channel capacity of transmission channel 806 is the theoretically maximum bit rate that can be transmitted through transmission channel" (Column 7 lines 49 to 52). Ojard describes several different modulation type's such as APSK and QAM; however, Ojard does not disclose a signal where the data contained within the signal is intended for two or more different receivers.

Applicants therefore submit that Claim 9 is not anticipated by Trachewsky. Applicants also submit that Claims 10 and 12 are not anticipated by Trachewsky at least by virtue of their dependencies.

Claims 27 and 29 have been amended and recite the feature of a "signal comprising a plurality of data streams modulated at different respective modulation levels the data stream's modulation level selected according to the signal to noise ratio of the intended receiver" as claimed Claim 9. Therefore, Applicants respectfully submit that Trachewsky does not anticipate Claim 29. Applicants also submit that Trachewsky does not anticipate Claim 28 at least by virtue of its dependency upon Claim 27.

The Examiner disagrees and asserts, that Trachewsky discloses the very well known Local Area Network Ethernet IEEE Std 802.3 were a host unit is communication with several devices at different rates using different modulations (see figure 12a-12g) in function of the quality of the signal received in each device, because the way it is implemented there are collisions between the signal of the different system communication with the host . For these reasons and the reasons stated in the previous Office action, the rejections of claims 10, 12, 27, 28 and 29 are maintained.

b) Regarding Claim Rejections – 35 USC 103

The Applicant contends:

"None of the embodiments in Ishio disclose or even suggest a "signal comprising a plurality of data streams modulated at different respective modulation levels the data stream's modulation level selected according to the signal to noise ration of the intended receiver" as claimed In Claim 9. Rather, Ishio only discloses modulating signals using different methods such as ASK, PSK, FSK and QPSK and then transmitting the signals to a receiver.

As none of the IEEE 802.11a standard, Qiao, Schafer, Trachewsky or Ishio disclose this feature of Claim 9, Applicants submit that amended claim 9 would not have been obvious In view of the combination of any of the IEEE 802.11a standard, Qiao, Schafer or Trachewsky with Ishio.

For the same reasons Applicants submit that Claims 27 and 29 would not have been obvious in view of the any of the combinations of prior art cited by the Examiner. Applicants submit that Claims 10 to 12 and 28 would not have been obvious in view of

the combination of the IEEE 802.11a standard and Ishio at least by virtue of their dependencies."

The Examiner disagrees and asserts, that Ishio, as stated in the previous Office action is used in a 103 rejection to support the rejections of claims 11 and 23 (see previous Office action pages 9-16. Ishio was never mentioning in the rejections of claims 9, 10, 12 and 27-29.

As indicated previously Examiner disagrees with Applicants in the teachings of IEEE 802.11a standard, Qiao, Schafer, Trachewsky (IEEE 802.3). It is very well known the communication of a sever unit with different systems (this is call a communications network) using different modulation levels for each system based in the quality of the signal received for each system (usually this is dependent of the distance of the system to the server).

Claim Objections

Claims 9-12 are objected to because of the following informalities:

a) In line 4 of claim 9 the recitation "signal to noise ration" is improper, because it is never used in the disclosure; it is suggested to be changed to "carrier to noise ratio" (see abstract, paragraphs [0005], [0007], [0011], [0013], [0031] and [0042] of the Application Publication US 20030118123 A1).

b) In line 12 of claim 9 the recitation "signal to noise ratio" is improper, because it is never used in the disclosure; it is suggested to be changed to "carrier to noise ratio" (see abstract, paragraphs [0005], [0007], [0011], [0013], [0031] and [0042] of the Application Publication US 20030118123 A1).

Claims 27-28 are objected to because of the following informalities:

a) In line 5 of claim 27 the recitation "signal to noise ratio" is improper, because it is never used in the disclosure; it is suggested to be changed to "carrier to noise ration" (see abstract, paragraphs [0005], [0007], [0011], [0013], [0031] and [0042] of the Application Publication US 20030118123 A1).

Claim 29 is objected to because of the following informalities:

a) In line 4 of claim 29 the recitation "signal to noise ration" is improper, because it is never used in the disclosure; it is suggested to be changed to "carrier to noise ratio" (see abstract, paragraphs [0005], [0007], [0011], [0013], [0031] and [0042] of the Application Publication US 20030118123 A1).

b) In line 12 of claim 29 the recitation "signal to noise ratio" is improper, because it is never used in the disclosure; it is suggested to be changed to "carrier to noise ratio" (see abstract, paragraphs [0005], [0007], [0011], [0013], [0031] and [0042] of the Application Publication US 20030118123 A1).

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 9, 10, 12, and 27-29 are rejected under 35 U.S.C. 102(b) as being anticipated by the IEEE 802.11a standard (Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications, High-speed Physical Layer in the 5 GHz Band, 1999).

As per claim 9 the IEEE802.11a discloses a method of receiving data over a communications network which carriers a signal comprising a plurality of data streams modulated at different respective modulation levels the data stream's modulation level selected according to the signal to noise ratio comprising (a) the plurality of receivers receiving the signal over the network (section 5.2 page 10 802.11, section 17 pages 3-45, section 17.3.8.1 page 24 table 86), and (b) each receiver demodulating a first data stream from the signal (section 17 pages 3-45, section 17.3.8.1 page 24 figure 118), and (c) attempting to demodulate at least one further data stream from the signal; (section 17 pages 3-45, section 17.3.8.1 page 24 figure 118); the data streams demodulated by each receiver being determined according to the receiver's signal to noise ratio (section 17.2, table 78 and 91; a graphical representation is provided by Qiao in table 1 and figure 9).

As per claim 10 the IEEE802.11a discloses that the modulation of the radio signal is quadrature amplitude modulation (section 17 pages 3-45, section 17.3.8.1 page 24 table 86).

As per claim 12 the IEEE802.11a discloses sending an acknowledgement for each data portion of a data stream which is successfully received and demodulated (section 9 pages 70-97 IEEE802.11).

As per claim 27 the IEEE802.11a discloses a plurality of receivers each including a demodulator arranged to demodulate a signal having a plurality of data streams modulated in a way which provides different susceptibility to noise (section 5.2 page 10 802.11, section 17 pages 3-45, section 17.3.8.1 page 24 table 86 and section 17.3.9.7 page 29), the data streams demodulated by each receiver being determined according to the receiver's signal to noise ratio (section 17.2, table 78 and 91; a graphical representation is provided by Qiao in table 1 and figure 9)..

As per claim 28 the IEEE802.11a discloses that the demodulator is arranged to demodulate a received signal modulated at different respective modulation levels for each data stream (section 17 pages 3-45, section 17.3.8.1 page 24 table 86).

As per claim 29 the IEEE802.11a discloses a Network including a plurality of receivers adapted to carry a signal sent to a plurality of receivers, the signal comprising a plurality of data streams modulated at different respective modulation levels, the data stream's modulation level selected according to the signal to noise ration of the Intended receiver, the network including a computer program which when executed on a suitable receiver in the network causes the receiver (section 5.2 page 10 802.11, section 17 pages 3-45, section 17.3.8.1 page 24 table 86) to (a) receive a signal over the network which carries a plurality of data streams modulated at different respective modulation levels (section 17 pages 3-45, section 17.3.8.1 page 24 table 86 and figure

118 and Annex D pages 469-522 IEEE802.11 and pages 51-53 IEEE802.11a), (b) demodulate a first data stream from the signal (section 17 pages 3-45, section 17.3.8.1 page 24 table 86 and figure 118 and Annex D pages 469-522 IEEE802.11 and pages 51-53 IEEE802.11a), and (c) attempt to demodulate at least one further data stream from the signal (section 17 pages 3-45, section 17.3.8.1 page 24 table 86 and figure 118 and Annex D pages 469-522 IEEE802.11 and pages 51-53 IEEE802.11a); the data streams demodulated by each receiver being determined according to the receiver's signal to noise ratio (section 17.2, table 78 and 91; a graphical representation is provided by Qiao in table 1 and figure 9).

Claims 9, 10, 12, and 27-29 are rejected under 35 U.S.C. 102(e) as being anticipated by Qiao ("Goodput Enhancement of IEEE 802.11a Wireless LAN via Link Adaptation", in Proc. IEEE ICC'2001, Helsinki, Finland, June 11~14, 2001).

As per claim 9 Qiao discloses a method of receiving data over a communications network which carriers a signal comprising a plurality of data streams modulated at different respective modulation levels the data stream's modulation level selected according to the signal to noise ratio comprising (a) the plurality of receivers receiving the signal over the network (pages 1-5 table 1, a wireless Local Area Network by definition has a plurality of receivers), and (b) each receiver demodulating a first data stream from the signal (pages 1-5 table 1), and (c) attempting to demodulate at least one further data stream from the signal; (pages 1-5 table 1); the data streams demodulated by each receiver being determined according to the receiver's signal to noise ratio (pages 1-5, table 1 and figure 9).

As per claim 10 Qiao discloses that the modulation of the radio signal is quadrature amplitude modulation (pages 1-5 table 1).

As per claim 12 Qiao discloses sending an acknowledgement for each data portion of a data stream which is successfully received and demodulated (pages 1-5 table 1 and section II.A page 2).

As per claim 27 Qiao discloses a plurality of receivers each including a demodulator arranged to demodulate a signal having a plurality of data streams modulated in a way which provides different susceptibility to noise (pages 1-5 table 1, a wireless Local Area Network by definition has a plurality of receivers and figures 6-9), the data streams demodulated by each receiver being determined according to the receiver's signal to noise ratio (pages 1-5 table 1 and figures 6-9).

As per claim 28 Qiao discloses that the demodulator is arranged to demodulate a received signal modulated at different respective modulation levels for each data stream (pages 1-5 table 1).

As per claim 29 Qiao discloses a Network including a plurality of receivers adapted to carry a signal sent to a plurality of receivers, the signal comprising a plurality of data streams modulated at different respective modulation levels, the data stream's modulation level selected according to the signal to noise ration of the Intended receiver, the network including a computer program which when executed on a suitable receiver in the network causes the receiver (pages 1-5 table 1, a wireless Local Area Network by definition has a plurality of receivers and figures 6-9) to (a) receive a signal over the network which carries a plurality of data streams modulated at different

respective modulation levels (pages 1-5 table 1, a wireless Local Area Network by definition has a plurality of receivers and figures 6-9), (b) demodulate a first data stream from the signal (pages 1-5 table 1, a wireless Local Area Network by definition has a plurality of receivers and figures 6-9), and (c) attempt to demodulate at least one further data stream from the signal (pages 1-5 table 1, a wireless Local Area Network by definition has a plurality of receivers and figures 6-9); the data streams demodulated by each receiver being determined according to the receiver's signal to noise ratio (pages 1-5 table 1, a wireless Local Area Network by definition has a plurality of receivers and figures 6-9).

Claims 9, 10, and 27-29 are rejected under 35 U.S.C. 102(e) as being anticipated by Schafer (US 6404755 B1).

As per claim 9 Schafer discloses a method of receiving data over a communications network which carriers a signal comprising a plurality of data streams modulated at different respective modulation levels the data stream's modulation level selected according to the signal to noise ratio comprising (figure 1 column 2 lines 26-49; column 4 lines 24-61) (a) the plurality of receivers receiving the signal over the network (figure 5 and 6 column 10 line 21 to column 11 line 57), and (b) each receiver demodulating a first data stream from the signal (figure 5 and 6 column 10 line 21 to column 11 line 57), and (c) attempting to demodulate at least one further data stream from the signal (figure 5 and 6 column 10 line 21 to column 11 line 57); the data streams demodulated by each receiver being determined according to the receiver's signal to noise ratio (figure 1 column 2 lines 26-49; column 4 lines 24-61).

As per claim 10 Schafer discloses that the modulation of the radio signal is quadrature amplitude modulation (figure 5 and 6 column 10 line 21 to column 11 line 57).

As per claim 27 Schafer discloses a plurality of receivers each including a demodulator arranged to demodulate a signal having a plurality of data streams modulated in a way which provides different susceptibility to noise (figure 1 column 4 line 64 to column 5 line 43), the data streams demodulated by each receiver being determined according to the receiver's signal to noise ratio (figure 1 column 2 lines 26-49; column 4 lines 24-61).

As per claim 28 Schafer discloses that the demodulator is arranged to demodulate a received signal modulated at different respective modulation levels for each data stream (figure 5 and 6 column 10 line 21 to column 11 line 57).

As per claim 29 Schafer discloses a Network including a plurality of receivers adapted to carry a signal sent to a plurality of receivers, the signal comprising a plurality of data streams modulated at different respective modulation levels, the data stream's modulation level selected according to the signal to noise ration of the Intended receiver, the network including a computer program which when executed on a suitable receiver in the network causes the receiver (figure 1 column 2 lines 26-49; column 4 lines 24-61) to (a) receive a signal over the network which carries a plurality of data streams modulated at different respective modulation levels (figure 5 and 6 column 10 line 21 to column 11 line 57), (b) demodulate a first data stream from the signal (figure 5 and 6 column 10 line 21 to column 11 line 57), and (c) attempt to demodulate at least

one further data stream from the signal (figure 5 and 6 column 10 line 21 to column 11 line 57); the data streams demodulated by each receiver being determined according to the receiver's signal to noise ratio (figure 1 column 2 lines 26-49; column 4 lines 24-61).

Claims 9, 10, 12, and 27-29 are rejected under 35 U.S.C. 102(e) as being anticipated by Trachewsky (US 6891881).

As per claim 9 Trachewsky discloses a method of receiving data over a communications network which carriers a signal comprising a plurality of data streams modulated at different respective modulation levels the data stream's modulation level selected according to the signal to noise ratio comprising (figure 89a and 89b column 47 line 5 to column 48 line 55; column 64 line 48 to column 66 line 13; figures 30 and 12a-12g column 20 line 9 to column 21 line 46; a Local Area Network, by definition has several receivers) (a) the plurality of receivers receiving the signal over the network (figures 30 and 12a-12g column 20 line 9 to column 21 line 46), and (b) each receiver demodulating a first data stream from the signal (figures 30 and 12a-12g column 20 line 9 to column 21 line 46), and (c) attempting to demodulate at least one further data stream from the signal (figure 5 and 6 column 10 line 21 to column 11 line 57); the data streams demodulated by each receiver being determined according to the receiver's signal to noise ratio (figures 30 and 12a-12g column 20 line 9 to column 21 line 46).

As per claim 10 Trachewsky discloses that the modulation of the radio signal is quadrature amplitude modulation (figures 30 and 12a-12g column 20 line 9 to column 21 line 46).

As per claim 12 Trachewsky discloses sending an acknowledgement for each data portion of a data stream which is successfully received and demodulated (figures 30 and 12a-12g column 20 line 9 to column 21 line 46).

As per claim 27 Trachewsky discloses a plurality of receivers each including a demodulator arranged to demodulate a signal having a plurality of data streams modulated in a way which provides different susceptibility to noise (figure 89a and 89b column 47 line 5 to column 48 line 55; column 64 line 48 to column 66 line 13; figures 30 and 12a-12g column 20 line 9 to column 21 line 46; a Local Area Network, by definition has several receivers), the data streams demodulated by each receiver being determined according to the receiver's signal to noise ratio (figure 1 column 2 lines 26-49; column 4 lines 24-61; figure 89a and 89b column 47 line 5 to column 48 line 55; column 64 line 48 to column 66 line 13; figures 30 and 12a-12g column 20 line 9 to column 21 line 46; a Local Area Network, by definition has several receivers).

As per claim 28 Trachewsky discloses that the demodulator is arranged to demodulate a received signal modulated at different respective modulation levels for each data stream (figures 30 and 12a-12g column 20 line 9 to column 21 line 46).

As per claim 29 Trachewsky discloses a Network including a plurality of receivers adapted to carry a signal sent to a plurality of receivers, the signal comprising a plurality of data streams modulated at different respective modulation levels, the data stream's modulation level selected according to the signal to noise ration of the Intended receiver, the network including a computer program which when executed on a suitable receiver in the network causes the receiver (figure 89a and 89b column 47 line 5 to

column 48 line 55; column 64 line 48 to column 66 line 13; figures 30 and 12a-12g column 20 line 9 to column 21 line 46; a Local Area Network, by definition has several receivers) to (a) receive a signal over the network which carries a plurality of data streams modulated at different respective modulation levels (figures 30 and 12a-12g column 20 line 9 to column 21 line 46), (b) demodulate a first data stream from the signal (figures 30 and 12a-12g column 20 line 9 to column 21 line 46), and (c) attempt to demodulate at least one further data stream from the signal (figures 30 and 12a-12g column 20 line 9 to column 21 line 46); the data streams demodulated by each receiver being determined according to the receiver's signal to noise ratio (figure 89a and 89b column 47 line 5 to column 48 line 55; column 64 line 48 to column 66 line 13; figures 30 and 12a-12g column 20 line 9 to column 21 line 46; a Local Area Network, by definition has several receivers).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over IEEE 802.11a standard (Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications, High-speed Physical Layer in the 5 GHz Band, 1999) as applied to claim 9 above, and further in view of Ishio (US 4039961). IEEE802.11a discloses claim 9. IEEE802.11a doesn't disclose a QPSK signal at a first assumed amplitude

level, normalizing the remaining signal by subtracting the decoded phase position of the demodulated first QPSK data word from the received signal and repeating the QPSK decoding and normalizing steps for progressively smaller assumed amplitude levels to demodulate each said further data stream. Ishio discloses a QPSK signal at a first assumed amplitude level, normalizing the remaining signal by subtracting the decoded phase position of the demodulated first QPSK data word from the received signal and repeating the QPSK decoding and normalizing steps for progressively smaller assumed amplitude levels to demodulate each said further data stream (figures 1-5 column 4 lines 1-52). IEEE802.11a and Ishio are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine in the receiving circuit disclosed by IEEE802.11a with the layered modulation disclosed by Ishio. The suggestion/motivation for doing so would have been to provide an optical communication system which can generate a radio frequency signal excellent in noise characteristics (Ishio column 1 lines 65-68). Therefore, it would have been obvious to combine IEEE802.11a with Ishio to obtain the invention as specified in claim 11.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Qiao ("Goodput Enhancement of IEEE 802.11a Wireless LAN via Link Adaptation", in Proc. IEEE ICC'2001, Helsinki, Finland, June 11~14, 2001) as applied to claim 9 above, and further in view of Ishio (US 4039961). Qiao discloses claim 9. Qiao doesn't disclose a QPSK signal at a first assumed amplitude level, normalizing the remaining signal by subtracting the decoded phase position of the demodulated first QPSK data word from

the received signal and repeating the QPSK decoding and normalizing steps for progressively smaller assumed amplitude levels to demodulate each said further data stream. Ishio discloses a QPSK signal at a first assumed amplitude level, normalizing the remaining signal by subtracting the decoded phase position of the demodulated first QPSK data word from the received signal and repeating the QPSK decoding and normalizing steps for progressively smaller assumed amplitude levels to demodulate each said further data stream (figures 1-5 column 4 lines 1-52). Qiao and Ishio are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine in the receiving circuit disclosed by Qiao with the layered modulation disclosed by Ishio. The suggestion/motivation for doing so would have been to provide an optical communication system which can generate a radio frequency signal excellent in noise characteristics (Ishio column 1 lines 65-68). Therefore, it would have been obvious to combine Qiao with Ishio to obtain the invention as specified in claim 11.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schafer (US 6404755 B1) as applied to claim 9 above, and further in view of Ishio (US 4039961). Schafer discloses claim 9. Schafer doesn't disclose a QPSK signal at a first assumed amplitude level, normalizing the remaining signal by subtracting the decoded phase position of the demodulated first QPSK data word from the received signal and repeating the QPSK decoding and normalizing steps for progressively smaller assumed amplitude levels to demodulate each said further data stream. Ishio discloses a QPSK signal at a first assumed amplitude level, normalizing the remaining signal by

subtracting the decoded phase position of the demodulated first QPSK data word from the received signal and repeating the QPSK decoding and normalizing steps for progressively smaller assumed amplitude levels to demodulate each said further data stream (figures 1-5 column 4 lines 1-52). Schafer and Ishio are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine in the receiving circuit disclosed by Schafer with the layered modulation disclosed by Ishio. The suggestion/motivation for doing so would have been to provide an optical communication system which can generate a radio frequency signal excellent in noise characteristics (Ishio column 1 lines 65-68). Therefore, it would have been obvious to combine Schafer with Ishio to obtain the invention as specified in claim 11.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Trachewsky (US 6891881) as applied to claim 9 above, and further in view of Ishio (US 4039961). Trachewsky discloses claim 9. Trachewsky doesn't disclose a QPSK signal at a first assumed amplitude level, normalizing the remaining signal by subtracting the decoded phase position of the demodulated first QPSK data word from the received signal and repeating the QPSK decoding and normalizing steps for progressively smaller assumed amplitude levels to demodulate each said further data stream. Ishio discloses a QPSK signal at a first assumed amplitude level, normalizing the remaining signal by subtracting the decoded phase position of the demodulated first QPSK data word from the received signal and repeating the QPSK decoding and normalizing steps for progressively smaller assumed amplitude levels to demodulate each said further

data stream (figures 1-5 column 4 lines 1-52). Trachewsky and Ishio are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine in the receiving circuit disclosed by Trachewsky with the layered modulation disclosed by Ishio. The suggestion/motivation for doing so would have been to provide an optical communication system which can generate a radio frequency signal excellent in noise characteristics (Ishio column 1 lines 65-68). Therefore, it would have been obvious to combine Trachewsky with Ishio to obtain the invention as specified in claim 11.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juan A. Torres whose telephone number is (571) 272-3119. The examiner can normally be reached on Monday-Friday 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Juan Alberto Torres
9-15-2005

KEVIN BURD
PRIMARY EXAMINER